
Lectotypifications in the Genus *Tococa* Aublet (Melastomataceae)

Fabián A. Michelangeli

L. H. Bailey Hortorium, Department of Plant Biology, Cornell University, Ithaca, New York 14853, U.S.A. Present address: Department of Ornithology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, U.S.A.
fabian@amnh.edu

ABSTRACT. Lectotypes for 11 species of *Tococa* are here designated, either because the holotypes were lost during the fire at Berlin and there are known extant isotypes, or because several syntypes were cited in the original descriptions. Three neotypes are here designated, since the holotypes are lost or destroyed and no isotypes have been located to date.

Key words: lectotypes, Melastomataceae, neotypes, *Tococa*.

As a result of a monographic study of the genus *Tococa* Aublet, a number of taxa have been found to be in need of lectotypification. None of the regional floras published in the last 70 years (Gleason, 1931a, 1931b; Gleason & Killip, 1938; Macbride, 1941; Wurdack, 1973, 1980, 1993; Michelangeli, in press) have addressed this problem, even though the existence of such a problem has been acknowledged at times.

Of the close to 100 taxa that have been associated with *Tococa*, 7 were described with numerous collections cited but with no holotype designated, because this was not a requirement at the time. Additionally, 4 species need lectotypification because their holotypes deposited at Berlin were destroyed during World War II, but there are known isotypes for these species deposited at other herbaria. Three neotypes are being designated because the holotype was destroyed or lost, and there are no known isotypes.

The lectotypes here designated have been chosen in order to assure that specimens are representative of the species and characters agree with the original description. Therefore, they do not always correspond to a specimen deposited at the herbarium in which the species author used to work.

Tococa broadwayi Urban, Feddes Repert. 17: 163. 1921. TYPE: Tobago: inter Charlotteville et Parlatuvier in sylvis umbrosis humidis, Nov., *Broadway 4281* (holotype, B destroyed). NEOTYPE: Venezuela. Sucre: Peninsula de Paria, Ladera Norte de Cerro de Humo, 14 km

al N de Rio Grande Arriba, arriba de Boca de Cumana y Punto Siparo, Noroeste de Irapa, 1060 m, 1 Mar. 1966, *J. A. Steyermark 94999* (neotype, designated here, VEN; isoneotypes, F, US).

The holotype was destroyed during World War II, and there are no known photographs. Several other collections made by Urban are deposited at TRIN, but an extensive search by the curatorial staff of this herbarium failed to locate the cited specimen, or any collection of *T. broadwayi* by Urban. Due to the restricted distribution of this species (primary forests in Trinidad, Tobago, and the Paria Peninsula in northeastern Venezuela), very few specimens have been collected. The Steyermark specimen chosen as the neotype is not from the type locality, but it is one of the few collections that have all the characters listed in the original description.

Tococa capitata Trail ex Cogniaux, Fl. Bras. 14: 615. 1888. TYPE: Peru. Alto Amazonas: ad Januaria secus rio Purus, *Trail 288* (lectotype, designated here, K [photos at F, BH]; isolecotype, BR).

Two collections, *Trail 288* and *Trail 289*, are mentioned in the original description. *Trail 288* is chosen as the lectotype because it has flowers that correspond to the description in the protologue. *Trail 289* has only young fruits, and lacks many of the characters mentioned in the description, due to the advanced stage of the inflorescences.

Paratypes. PERU. Rio Jurna, floret Sep.–Oct., *Trail 289* (K).

Tococa caudata Markgraf, Notizbl. Bot. Gart. Berlin-Dahlem 9: 1146. 1927. TYPE: Ostperu: Mittlere Marañon, Mundung der Apaga, in flutfreien Hochwald, 145 m asl, 23 Dec. 1924, *Tessmann 4815* (holotype, B destroyed [photo at NY]). NEOTYPE: Peru. Loreto: Rio Nanay, 120 m, 4 Jan. 1976, *Gentry & Ayala 15549* (neotype, designated here, F; isoneotypes, AMAZ, MO, NY).

The holotype was destroyed during World War II, and no other specimens could be located at other herbaria in which Tessmann deposited his collections (BR, G, K). Even though the photograph of the type is of very good quality, several diagnostic characters of the calyx and the ovary are not discernible on it. Therefore, this photograph cannot be used as a photolectotype. The neotype designated here presents all the characters described in the protologue.

Tococa cordata Berg ex Triana, Trans. Linn. Soc. Bot. 28: 133. 1871. TYPE: Venezuela. Amazonas: San Carlos de Rio Negro, *Spruce 3477* (lectotype, designated here, K; isolectotypes, BR, K, NY).

Both collections *Spruce 2214* and *3477* are mentioned in the original description. One of the K specimens of *Spruce 3477* has both types of inflorescence described in the protologue, and, therefore, it is designated as the lectotype. It is important to point out that these two kinds of inflorescences represent different stages of development and not alternative forms.

Paratypes. BRAZIL. Necnon prope San Gabriel ad Rio Negro, *Spruce 2414* (K, P).

Tococa egensis Naudin, Ann. Sci. Nat., Bot., Ser. 3, 16: 92. 1851. TYPE: In Brasilia septentrionali, prope urbiculam Ega (now Tefé), *Poeppig 17202* (holotype, B destroyed [photos at F, NY]; lectotype, designated here, P).

The original description mentioned an unnumbered collection of Poeppig. However, as can be seen in the P specimen and in photographs of the B specimen, these specimens were annotated by Naudin with the number *17202* and referred to as types. The holotype, deposited at B, was destroyed during World War II. At M, where duplicates of most of Poeppig's collections are housed, there are several specimens of *T. egensis* but not one annotated by Naudin with the proper collection number. Therefore, the P specimen seems to be the only known isotype, and it is here designated as the lectotype.

Tococa erythrophylla (Ule) Wurdack, Mem. New York Bot. Gard. 10(5): 176. 1963. *Miconia erythrophylla* Ule, Notizbl. Gart. Berlin 6: 357. 1915. TYPE: British Guiana (now Guyana): am Abhang des Roraima, 2000 m asl., Feb. 1910, *Ule 8679* (holotype, B destroyed; isotype, K presumed lost). NEOTYPE: British Guiana (now Guyana): Partang River, Merume

Mountains, upper Mazaruni river Basin, 3 July 1960, *Tillet, Tillet & Boyan 43984* (neotype, designated here, NY; isoneotypes, K, P).

The holotype, deposited at B, was destroyed during World War II. Wurdack (1993) stated that there is an isotype deposited at K, but an extensive search for this specimen at K, as well as in other herbaria, was unsuccessful. The neotype designated here presents all the characteristics mentioned in the original description and was originally determined by Wurdack, who presumably also had access to the original type at one point.

Tococa hirta Berg ex Triana, Trans. Linn. Soc. Bot. 28: 132. 1871. TYPE: Venezuela. Amazonas: necnon prope San Carlos ad Rio Negro, *Spruce 3145* (lectotype, designated here, K; isolectotypes, BR, P).

The two collections of Spruce are mentioned in the original description and are annotated by Berg. The specimen of *Spruce 3145* deposited at K is designated as the lectotype because it agrees with the description in the protologue and has the largest number of known duplicates. The specimen at P is labeled as both *Spruce 3145* and *Spruce 3564*, and therefore it seems prudent to assign the status of isolectotype to it.

Paratypes. VENEZUELA. Amazonas: Prope Tomo ad flumen Guainia v Rio Negro supra ostium fluminis Casiquiari, *Spruce 3564* (K).

Tococa juruensis Pilger, Verh. Bot. Vereins Prov. Brandenburg 47: 176. 1905. TYPE: Brazil. Amazonas: Unterer Juruá, Fortaleza, *Ule 5914* (holotype, B destroyed [photo NY]; lectotype, here designated, K; isotypes, G, L).

The holotype was deposited at B and destroyed during World War II. The K specimen is designated as the lectotype.

Tococa longisepala Cogniaux, Fl. Bras. 14(4): 449. 1888. TYPE: Brazil. Alto Amazonas: prope Panure ad Rio Uaupes, *Spruce 2446* (lectotype, designated here, P; isolectotypes, BR [fragment], K, P[2]).

Of the four different collections cited in the original description, *Spruce 2446* is the best preserved, has various duplicates, and has original annotations made by Cogniaux. Therefore, it is selected here as the lectotype.

Paratypes. BRAZIL. Alto Amazonas: in vicinia Manaos, *Spruce 1156* (P); Ad Ygarape da Cachoeira gran-

de, prope Manaos, *Schwacke III 342* (BR). **Rio de Janeiro:** *Glaziou 13831* (BR, K, P[2]).

Tococa macrophysca Spruce ex Triana, Trans. Linn. Soc. Bot. 28: 132. 1871. TYPE: Colombia. Prope Panure ad Rio Uaupes et S. Gabriel ad Rio Negro, in parte Orientali prov. Rio Negro, *Spruce 2188* (lectotype, designated here, K; isoelectotypes, BR [fragment], K, P, W not seen).

Three different collections, all from the same locality, are cited in the original description, and all of them are consistent with the description. *Spruce 2188* is in good condition and has a drawing of a dissected flower, presumably by Spruce, and therefore it is designated as the lectotype.

Paratypes. COLOMBIA. Same localities, *Spruce 2825* (BR, G, K, P), *Spruce 2912* (K).

Tococa macroptera Naudin, Ann. Sci. Nat., Bot., Ser. 3, 16: 94. 1851. TYPE: Brazil. Goiás: *Gardner 3174* (lectotype, designated here, P; isoelectotypes, BM, K[3], NY, P[2]).

Of the two collections mentioned in the description, Gardner's is designated as the lectotype because it is a well-preserved specimen, and it has a larger number of existing duplicates.

Paratypes. BRAZIL. **Central:** Sertao d'Amaroleité, *Wedell 2499* (P).

Tococa micrantha Ule, Notizbl. Bot. Gart. Berlin-Dahlem 6: 364. 1915. TYPE: Peru. Loreto: Sep. 1902, *Ule 6369* (holotype, B destroyed; lectotype, designated here, K; isotypes, F, G, L).

Since the holotype was destroyed during World War II, the best preserved isotype, which additionally has more reproductive structures, is chosen as the lectotype.

Tococa subglabrata Cogniaux, Fl. Bras. 14: 438. 1888. TYPE: Brazil. Piauhy, *Gardner 2862* (lectotype, designated here, P; isoelectotypes, BR, K[2], NY, P[2]).

Of the different collections cited in the original description of *T. subglabrata*, *Gardner 2862* not only is the best preserved, but it also has the largest

number of duplicates. Therefore it is chosen here as the lectotype. Additionally, *Riedel 1145* and *Pohl 3989* have not been located.

Paratypes. *Martius s.n.* (G), *Riedel 1145* (not seen), *Pohl 3989* (not seen).

Tococa ulei Pilger, Verh. Bot. Vereins Prov. Brandenburg 47: 177. 1905. TYPE: Peru. Loreto: *Ule 6200* (holotype, B destroyed [photos at F, NY]; lectotype, designated here, K; isotypes, G, L).

The holotype was destroyed during World War II. The K specimen is designated as the lectotype.

Acknowledgments. I thank the curators and staff of the following herbaria for allowing me access to their collections and/or for providing the loans, images, or information necessary for this study: B, BM, BR, CAS, F, FLAS, G, K, L, M, MER, MO, MYF, NY, P, TRIN, US, VEN, W, and WIS. Visits to BM, BR, K, MER, MYF, P, US, and VEN were possible thanks in part to support from the Andrew Mellon Fund from the L. H. Bailey Hortorium, grants to Eloy Rodriguez (Department of Plant Biology, Cornell University), and the American Society of Plant Taxonomists Graduate Research Awards. Jerrold Davis, Susanne Renner, and two anonymous reviewers provided comments that helped to improve this manuscript.

Literature Cited

- Gleason, H. A. 1931a. Results of the Tyler-Duida expedition. Bull. Torrey Bot. Club 58: 277–506.
 ——— 1931b. Studies on the flora of northern South America—XV. Recent collections of Melastomataceae from Peru and Amazonian Brazil. Bull. Torrey Bot. Club 58: 215–262.
 ——— & E. P. Killip. 1938. The flora of mount Auyan-Tepui, Venezuela. Geogr. Rev. 28: 452–474.
 Macbride, J. F. 1941. Melastomataceae. In Flora of Peru. Field Mus. Publ. Bot. 13: 249–523.
 Michelangeli, F. A. In Press. *Tococa* (Melastomataceae). In P. E. Berry, B. K. Holst & K. Yatskievych. Flora of the Venezuelan Guayana, Vol. 6. Missouri Botanical Garden Press, St. Louis.
 Wurdack, J. J. 1973. Melastomataceae. Pp. 1–819 in T. Lasser (editor), Flora de Venezuela. Vol. VIII. Instituto Botánico, Caracas.
 ———. 1980. Melastomataceae. Pp. 406 in G. Harling & B. Sparre (editors), Flora of Ecuador No. 13. University of Göteborg, Swedish Natural Science Research Council, Stockholm.
 ———. 1993. Melastomataceae. Flora of the Guianas, Series A Phanerogams 13: 3–301.